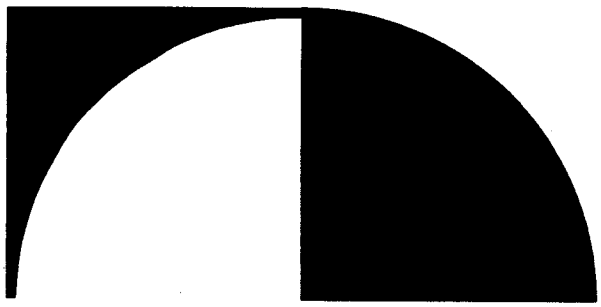

Nakamichi 600II

2 Head Cassette Console

Owner's Manual

WARNING
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

A record of the serial number will help you in the event of insurance claims, shipping or warranty service. Record the serial number (embossed on a plate on the rear panel of the unit) in the space provided below.

Model Number: Nakamichi 600 II
Serial Number : _____

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Thank you for your purchase of
the Nakamichi 600 II Cassette Console.
We believe it will provide you
with many years of superior performance.

You will enjoy that performance longer
and more completely if you take the time
to familiarize yourself with this manual.

NAKAMICHI RESEARCH INC.

Controls and Features

(1) memory switch:
"Remembers" any starting point on the tape. When you set the tape counter to 000 at the desired point and depress the "memory" switch, the transport will stop automatically from the rewind mode when the counter reaches 999.

(2) tape counter:
Indicates relative position on the tape. May be used to index selections on the tape.

(3) tape counter reset button:
Resets the tape counter to 000 when fully depressed.

(4) cassette lid:
Provides guides for accurate insertion of the cassette and leaves an unobstructed view of the cassette.

(5) cassette lid plate:
Can be removed to allow access to the heads and transport parts for cleaning and demagnetizing.

(6) head height and azimuth adjustment screws:
These adjustments have been calibrated at the factory for optimum performance. Readjustment should only be done by qualified service technicians.

(7) stop/eject button:
Stops the transport from fast forward, rewind, record or play when initially depressed. Once the transport is in the stop mode, depressing the stop/eject button will eject the cassette. Note: An interlock mechanism disengages the transport controls when the cassette lid is open.

(8) rewind button:
Moves tape rapidly in the reverse direction.

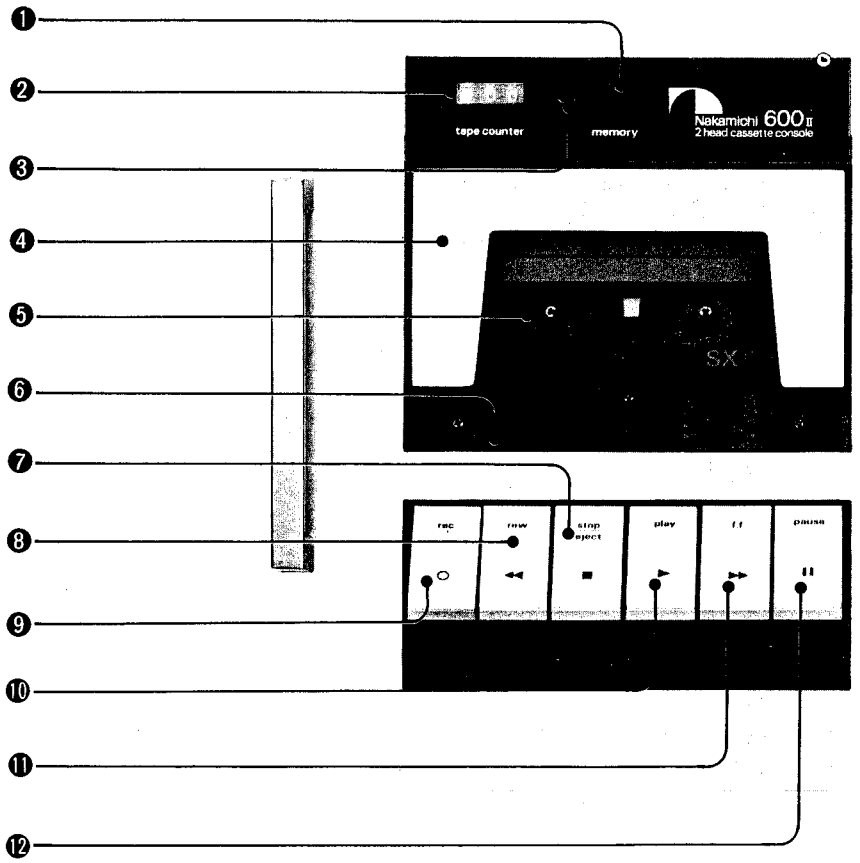
(9) record button:
To put the 600 II into the record mode, hold the record button down as you depress the play button.

(10) play button:
Starts the transport motion forward at the standard 1-7/8 inches per second for record and playback.

(11) fast forward button:
Moves tape rapidly in the forward direction.

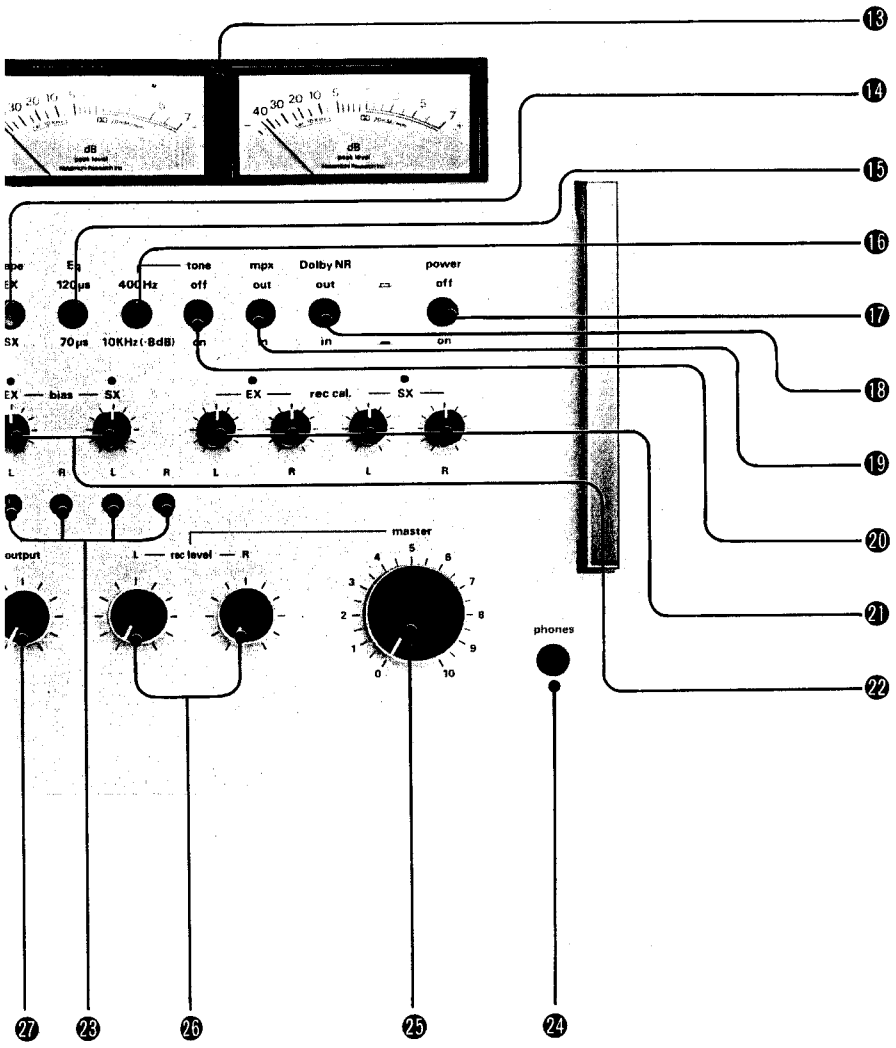
(12) pause button:
Halts the transport during record or play. By depressing the pause button before putting the 600 II in the record mode, you can adjust record levels while the tape is stationary. To commence record or playback, press the pause button a second time and release.

Front



(23) bias calibration controls:
Factory calibrations of the center-detent points for the bias adjustment controls. Readjustment should only be done by qualified service technicians.

(24) headphone jack:
For use with 8-ohm headphones.



(13) peak level meters:
The meters indicate a range from −40 to +7 dB. The 0 dB level conforms to the Dolby standard of 200 nanowebers per meter.

(14) tape switch:
Allows the choice of recording bias for high-coercivity and low-noise/high-output tapes. High-coercivity tapes, such as Nakamichi SX, require the depressed (SX) position. Low-noise/high-output tapes such as Nakamichi EX II, require the extended (EX) position. For more detailed information, see Page 6.

(15) Eq switch:
Allows the choice of the proper record and playback equalization for different types of tape. You can select either the 120-microsecond or the 70-microsecond time constant independently of the tape selector switch. For more detailed information, see Page 6.

(16) test tone frequency switch:
Selects the 400Hz 0 dB test tone in the extended position. Selects the 10 kHz −8dB test tone in the depressed position.

(17) power switch:
Activates the Nakamichi 600 II. The level meters will illuminate to indicate that the power is on.

(18) Dolby NR switch:
Activates Dolby Noise Reduction circuitry which reduces tape noise by as much as 10 dB when used during record and playback.

(19) mpx switch:
Engages a filter to attenuate the 19 kHz multiplex carrier signal present in FM stereo broadcasts. This carrier can "fool" the Dolby Noise Reduction circuitry. The switch should be in the "out" (extended) position when recording anything other than FM stereo broadcasts.

(20) test tone switch:
Activates the test tone in the depressed position.

(21) record calibration controls:
Adjustments to provide record level calibration, essential for proper tracking of the Dolby Noise Reduction circuit. For more detailed information, see Page 10.

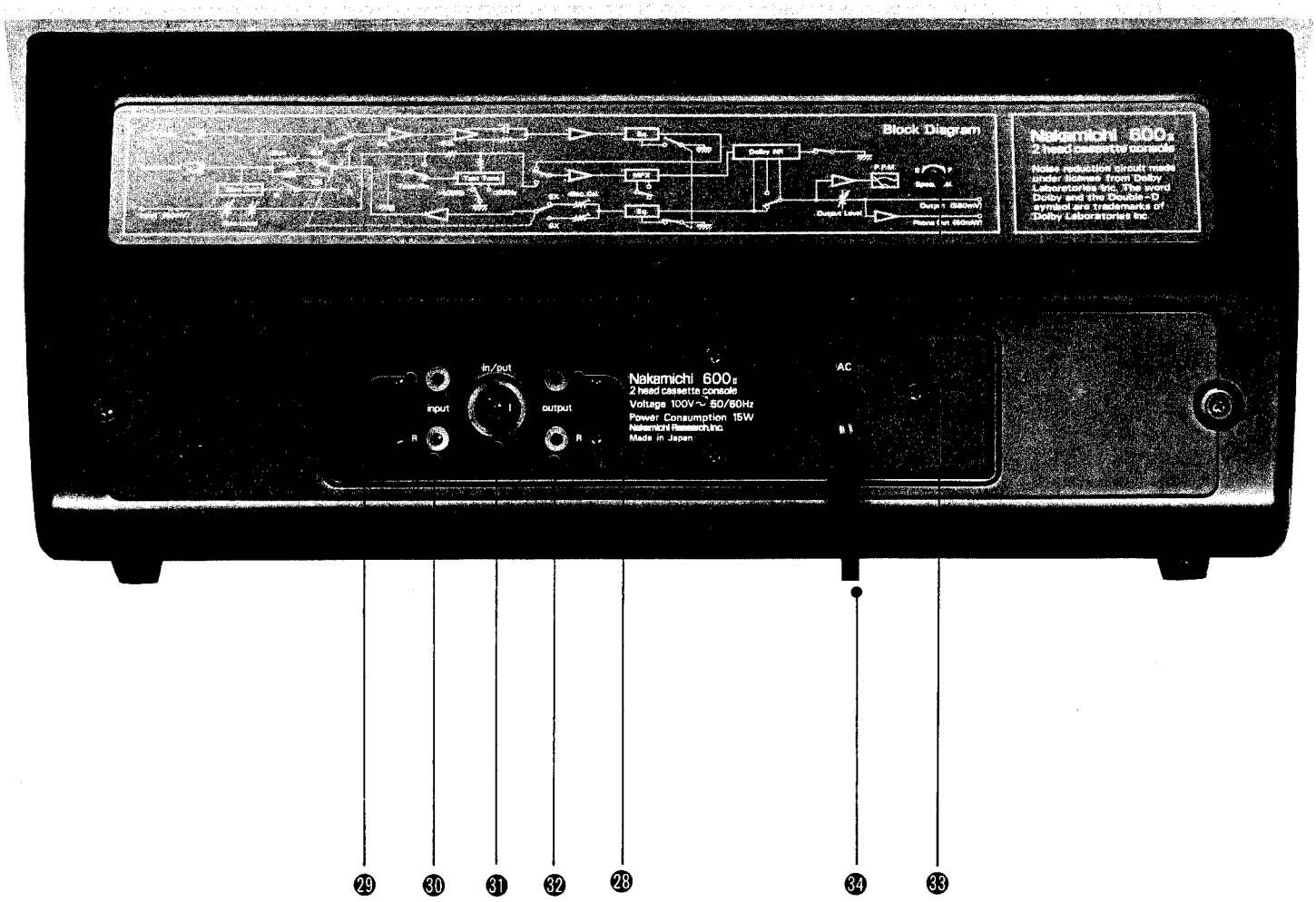
(22) bias adjustment controls:
In conjunction with the 10 kHz test tone, these controls fine-tune the record bias levels for each tape formulation you use. Separate adjustments for high-coercivity (SX) and low-noise/high-output (EX) tapes.

(25) master input level control:
Once the proper channel balance has been set using the left and right input level controls, the overall record level may be adjusted for both channels simultaneously with the master control.

(26) record level controls:
Separate left and right input level controls.

(27) output level control:
Controls the output volume of the 600 II during record and play. Has no effect on the record levels. In the maximum (fully clockwise) position, the output for each channel will be 580 mV at a meter reading of 0 dB.

Rear



(28) left output jack

(29) left input jack

(30) right input jack

(31) DIN in/out jack:
For an SM-type DIN connector.

(32) right output jack

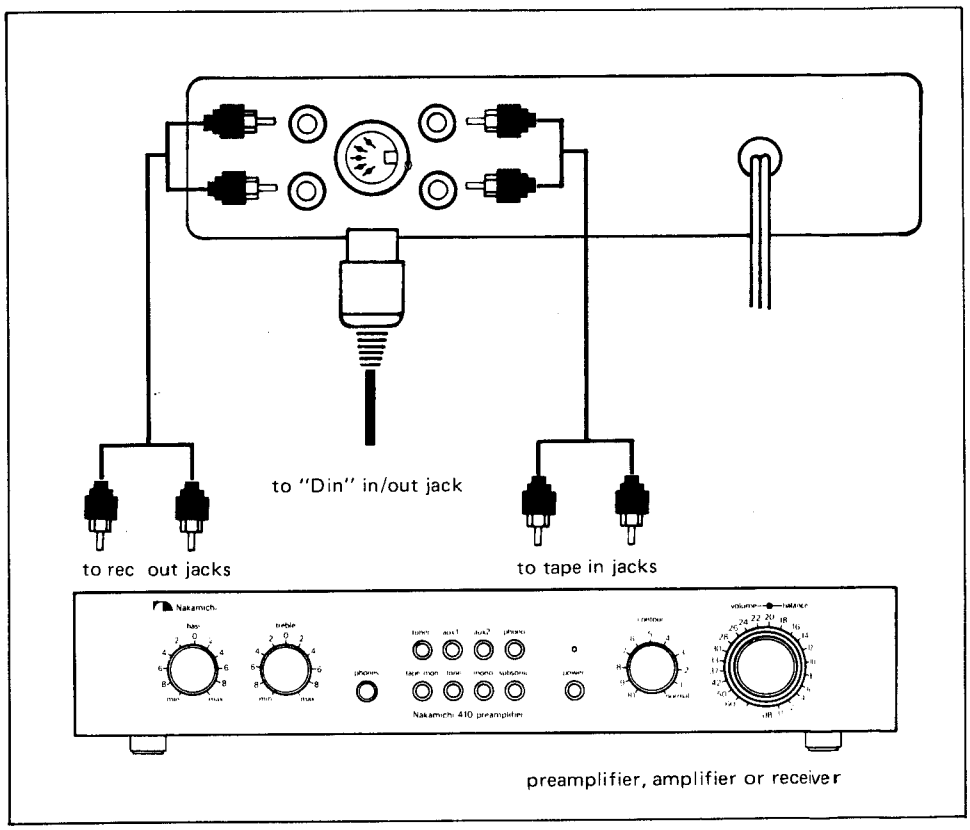
(33) speed calibration adjustment:
Factory calibrated for a tape speed of 1-7/8 inches per second. Readjustment should only be done by a qualified service technician.

(34) AC line cord

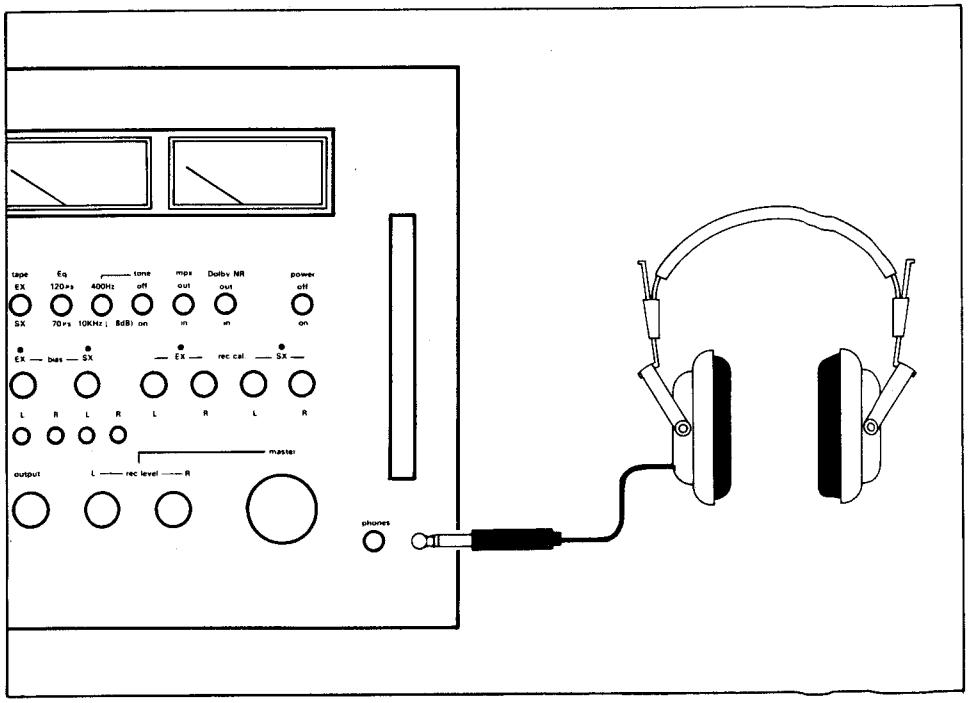
Connections

There are two ways of connecting the Nakamichi 600 II to your preamplifier, amplifier or receiver. You may use shielded cables with RCA plugs to connect the left and right "input" jacks (29 & 30) to the "rec" or "tape out" jacks on your preamplifier. In the same way, connect the "output" jacks (28 & 32) to the "tape in", "tape mon" or "aux in" jacks of your preamplifier.

If your preamplifier or receiver is equipped with a DIN socket, you may use an SM-type cable to connect the "DIN in/out" jack (31) to the preamplifier. (In this case, do not use RCA cables simultaneously.)



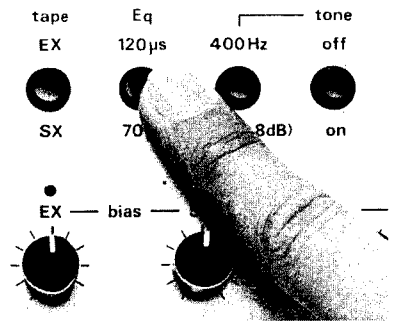
Connect headphones to the "phones" jack (24). Low impedance headphones (8 ohms nominal) are recommended.



Playback

(A) Turn on the "power" switch (17). The peak-level meters (13) will illuminate.

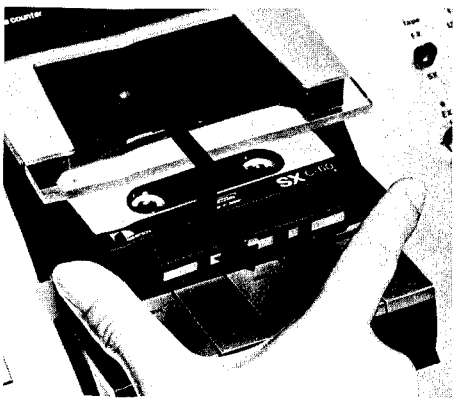
(B) Take a pencil or pen with hexagonal cross-section (or use a finger) to gently tighten any loose tape onto the supply reel of the cassette. The tape should be snug for proper contact with the capstans and pressure rollers.

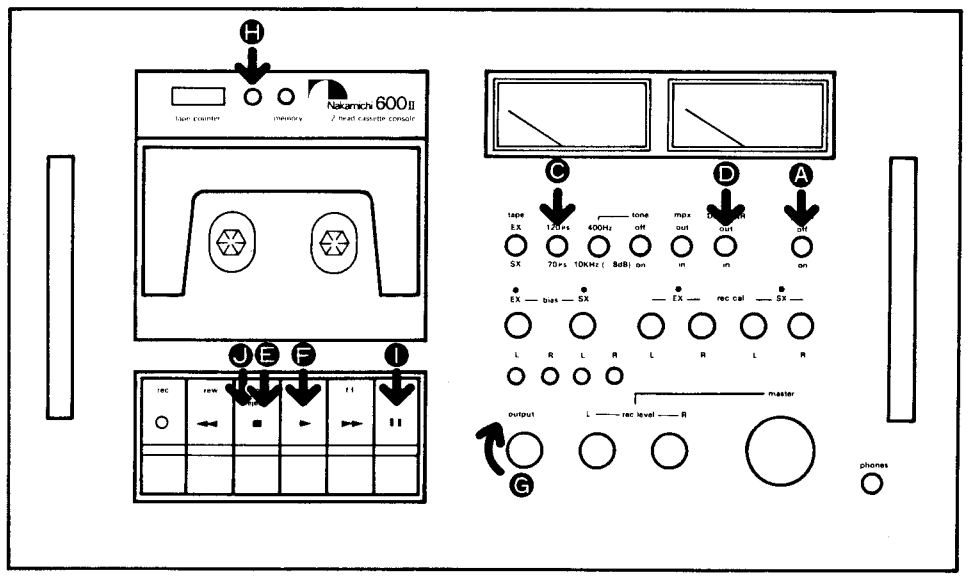


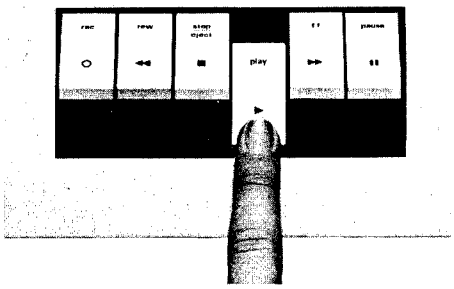
(C) Set the "Eq" switch (15) as required. See Page 6 for details. The "tape" switch (14) has no effect on playback.

(D) If the tape was recorded with the Dolby system, set the "Dolby NR" switch (18) to its "in" (depressed) position.

(E) Push the "stop/eject" button (7) and load the cassette with the exposed tape towards the bottom and the label of the desired side facing you. Close the cassette lid (4).





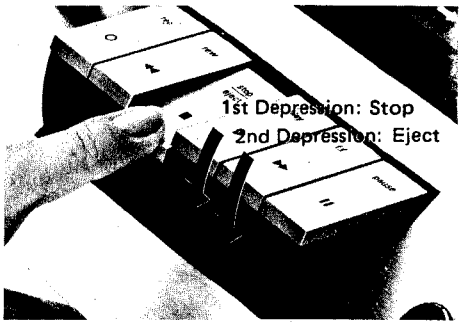


(F) Press the "play" button (10) to start the tape.

(G) Adjust the volume with the "output" level control (27).

(H) If you press the tape counter reset button (3) for a reading of 000 at a given point of the tape (for example, the beginning of a selection) you can use the "memory" switch (1) to return to that place. By setting the switch to its depressed position, the transport will stop automatically from the rewind mode when the counter reaches 999.

(I) To stop the tape momentarily, press the "pause" button (12). To continue playback, press the "pause" button a second time and release.



(J) To stop the transport altogether, press the "stop/eject" button (7). If you wish to eject the cassette, press the button once again. Note: An interlock mechanism disengages the transport controls when the cassette lid is open.

Recording

Recommended Tape

Extended high frequency response and low distortion can only be obtained through proper matching of cassette tape and cassette deck bias and equalization settings. The chart shows the cassette tapes currently recommended for use with Nakamichi decks and the proper "tape" (bias) switch (14) settings for approximate compatibility. Also shown are the "Eq" switch (15) settings for each tape. Tapes other than Nakamichi are listed in alphabetical order. In all cases, Nakamichi recommends the C-60 and C-90 lengths.

RECOMMENDED HIGH-COERCIVITY TAPES

tape/Eq Settings	Brand	Formulations
SX 70	Nakamichi	SX
	Maxell	UDXL-II
	TDK	SA

RECOMMENDED LOW-NOISE/ HIGH-OUTPUT TAPES

tape/Eq Settings	Brand	Formulations
EX 120	Nakamichi	EX, EX II
	Maxell	UD, UDXL-I
	TDK	AD

"tape" Switch

Bias is an inaudible high frequency tone used to reduce the distortions and non-linearities inherent in the magnetic tape recording process. For many years there was only one type of tape. Only engineers needed to concern themselves with bias. Today different formulations of tape require different biasing. The "tape" switch (14) sets the bias level applied to the tape during recording. (The switch does not affect playback.)

Nakamichi EXII tape and other low-noise/high-output tapes require one level of bias, sometimes termed "normal". High-coercivity tapes, such as Nakamichi SX, require 45% more bias. Your Nakamichi 600 II has been factory adjusted for Nakamichi EXII and Nakamichi SX tapes. The other recommended tapes are roughly compatible in their respective categories. On Page 11 of this manual, you will find a detailed procedure for fine-tuning the bias for optimum recording with each tape formulation.

"Eq" Switch

Equalization is used in record and playback to achieve optimum signal-to-noise performance for different tape formulations. Like bias, the proper "Eq" switch (15) settings must be selected for each type of tape. Unlike bias, the "Eq" switch must be set for both record and playback.

Low-noise/high-output tapes, including Nakamichi EX and EXII, require the 120-microsecond equalization time constant. High-coercivity tapes, such as Nakamichi SX, use the newer 70-microsecond time constant. Normally you would set the "Eq" switch according to the chart.

Special "Eq" Settings

The excellent high frequency performance of Nakamichi heads permits unusual settings of the "Eq" switch for special purposes.

(A) If you record a high-coercivity tape for someone who does not have 70-microsecond equalization (sometimes labeled the "CrO_2" or "Chrome" position) on his cassette machine, record with the "tape" switch in the "SX" position and the "Eq" switch in the 120-microsecond position.

(B) The term "headroom" refers to the margin of safety above which the tape will be saturated and severely distorted. With more headroom, you can record stronger signals without saturation. For extended high-frequency headroom at some sacrifice of signal-to-noise ratio with high-coercivity tape, record with the "tape" switch in the "SX" position and the "Eq" switch in the 120-microsecond position. Be sure to make note of the special equalization on the cassette label and to play back with the 120-microsecond setting.

(C) For better signal-to-noise performance at some sacrifice of high-frequency headroom with low-noise/high-output tape, record with the "tape" switch in the "EX" position and the "Eq" switch in the 70-microsecond position. As above, make note of the special equalization and play back with the 70-microsecond setting.

Record Procedure

(A) Turn on the "power" switch (17). The peak-level meters (13) will illuminate.

(B) Take a pencil or pen with hexagonal cross-section (or use a finger) to gently tighten any loose tape onto the supply reel of the cassette. The tape should be snug for proper contact with the capstans and pressure rollers.

(C) Set the "tape" switch (14) as required. Set the "Eq" switch as required. See Page 6 for details.

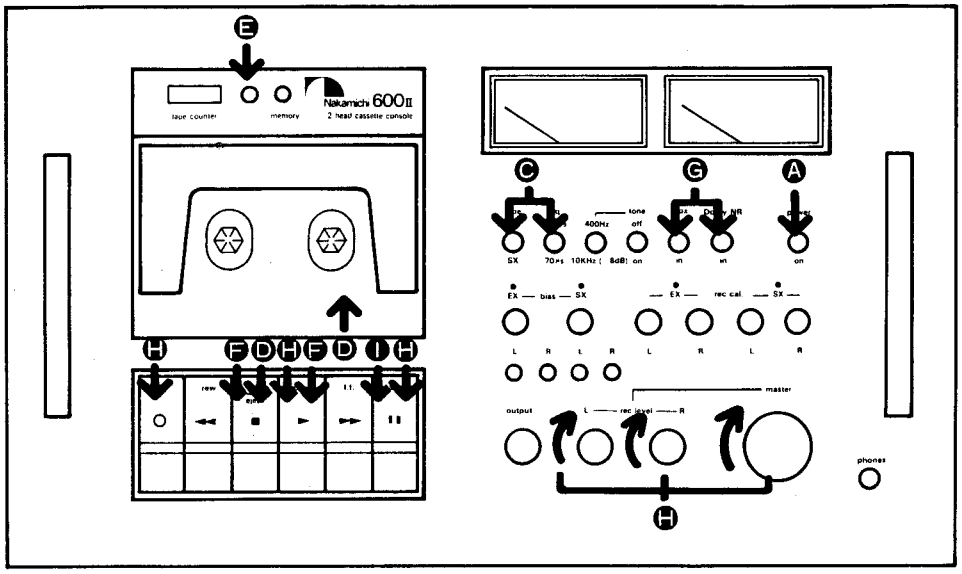
(D) Push the "stop/eject" button (7) and load the cassette with the exposed tape towards the bottom and the label of the desired side facing you. Close the cassette lid (4).

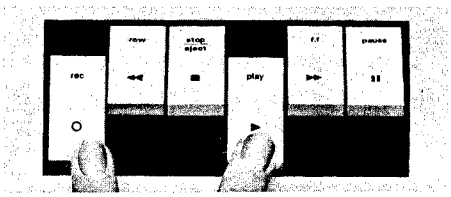
(E) Press the tape counter reset button (3). The tape counter (2) should read 000.

(F) Press the "play" button (10) and allow the tape to run to a count of 003. Press the "stop/eject" button (7). The first inches of tape have slight surface irregularities imprinted by the spool and the leader-tape splice. For this reason, it is best not to record from the very beginning of the tape.

(G) Set the "Dolby NR" switch (18) "in" for low-noise recording. Because Dolby decoding will be required for proper playback, be sure to make a note on the cassette label that the tape is Dolby-encoded. If you are recording an FM stereo broadcast, set the "mpx" switch (19) to "in". The 19 kHz multiplex pilot can "fool" the Dolby Noise Reduction circuitry.

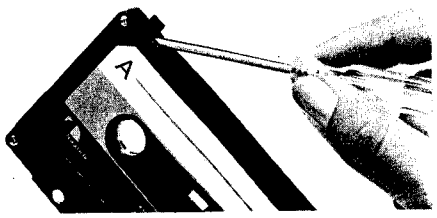
(H) Depress the "pause" button (12). Then hold the "record" button (9) down and press the "play" button (10). All three buttons will lock in the depressed position. You are now ready to set the input levels. If you can, use samples of the material to be recorded to set the left and right record level controls (26) and the master input level control (25). Use the independent controls to achieve the proper channel balance. Use the master control to set the overall record level. See the section on page 9 entitled "Tips on Setting Record Levels" for more detailed information on this procedure.





(I) To commence recording once levels are set, simply depress the "pause" button (12) and release. To halt recording temporarily, depress the "pause" button. Press the button again when you are ready to recommence.

(J) To stop recording altogether, touch the "stop" control. When you have completed recording an FM stereo broadcast, remember to return the "mpx" switch (19) to the "out" position.



Cassette Tabs

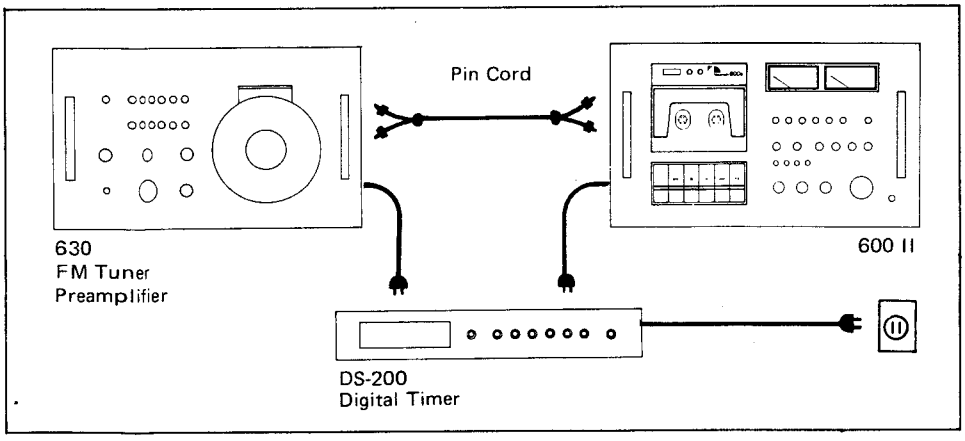
You can protect valuable recordings from accidental erasure and re-recording by completely removing the appropriate tab on the back of the cassette. The tab for each side is located on the back-left-hand corner as you look at the side. If you wish to record over a side for which the tab has been removed, cover the tab opening with a piece of adhesive tape.

Timer Operation

Normally, when power to the Nakamichi 600 II is switched off, the transport will automatically disengage. However, when the "pause" button (12) is depressed, the transport will remain in the same mode when power is switched off. Within 5 seconds of the restoration of power to the 600 II, the "pause" button will automatically disengage, and the transport will start. This design allows unattended recording and playback with an external timer. The Nakamichi DS-200 and the timer supplied with the Nakamichi SYSTEM ONE rack have been designed for such applications.

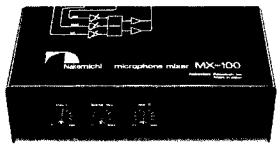
For unattended recording, first connect the AC power cords of the 600 II and the signal source to the external timer. Connect the output of the signal source to the line inputs of the 600 II. Load a cassette as before. Make the appropriate "tape", "Eq", record level and master level control settings. Select Dolby Noise Reduction and the FM "mpx" filter (19), if appropriate. Press the "pause" button (12). Depress the "record" (9) and "play" (10) buttons simultaneously so that they both lock into place. Leave the power switches of the 600 II and the signal source on. Set the external timer to the desired starting time.

The procedure for unattended playback is similar. Connect the AC power cords of the 600 II and the playback system to the external timer. Connect the output of the 600 II to the inputs of the playback system. Load a cassette as before. Make the appropriate "Eq", "Dolby NR" and "output" control settings. Press the "pause" button (12). Depress the "play" button (10) so that it locks into place. Leave the power switches of the 600 II and the playback system on. Set the external timer to the desired starting time.

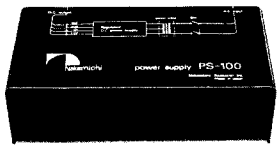


Live Recording

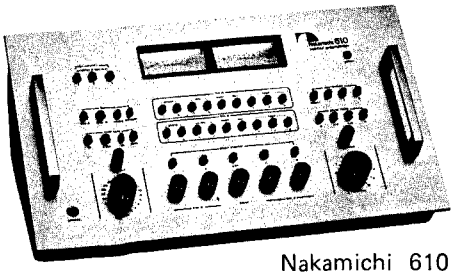
Although the Nakamichi 600 II is not equipped with microphone inputs, the companion model 610 Control Preamplifier has a complete 5-to-2 mixer with phase check and invert circuits. The Nakamichi BlackBox MX-100 Microphone Mixer has a 3-to-2 capability. The third input is for a "blend" or center-channel microphone, enabling you to record with the Nakamichi three-point live recording system. The MX-100 operates with the BlackBox PS-100 Power Supply.



MX-100



PS-100

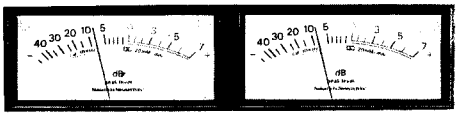


Nakamichi 610

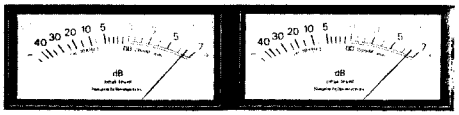
Tips on Setting Record Levels

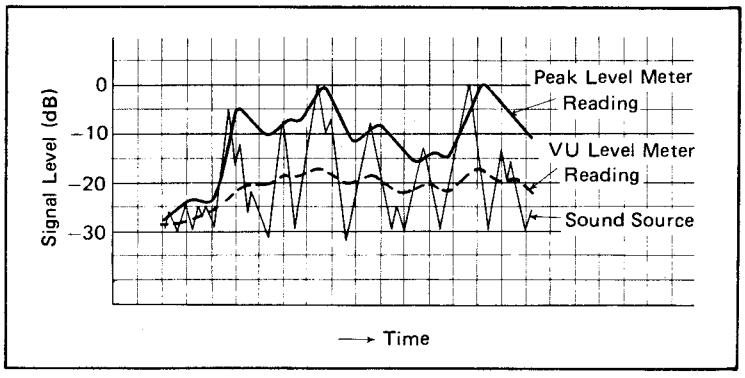
The proper setting of record levels requires practice and patience. Setting the level too high will result in tape saturation, which is audible as a grossly distorted recording. Low recording levels result in unacceptably noisy recordings because there is not enough of the signal on the tape to overcome the "hiss". Record level indicators vary in their effectiveness, but even the best indicator system is not totally foolproof. It takes experience to know just how much signal one can put on the tape. The best setting will be determined by the type of tape in use, the type of source material to be recorded and, to some degree, personal preferences of the user (some are willing to sacrifice signal-to-noise ratio for a totally distortion-free recording while others are willing to tolerate occasional tape saturation for quieter recordings).

The fast-acting peak-level meters of the Nakamichi 600 II are more accurate than the so-called VU meters found on most cassette decks. Conventional meters are not fast enough to give accurate indications of musical peaks. The illustration below shows that there can be as much as -8dB difference between a peak-reading meter and a conventional meter on a transient signal, even though the two meters give the same reading on a continuous signal.



As a guide, begin by setting the record levels so that the meters occasionally "peak" into the red region above 0 dB on a loud portion of the signal source. Brief excursions as high as +5 to +6 dB generally do not result in noticeable saturation. If the needles stay above 0 dB for long periods, however, you are almost certainly producing an unacceptably distorted recording. You can, of course, check whether the levels have been correctly set by making a brief sample recording of the loudest passages and listening carefully while playing it back. This is only possible, however, if your source is pre-recorded material, such as an LP record or another tape.





Record Calibration and Bias Adjustment

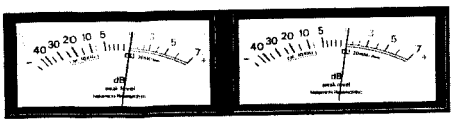
The various tapes in the two broad categories described on Page 6 are approximately compatible. But the record calibration and bias adjustments of the Nakamichi 600 II can be hand-tailored for optimum performance with each formulation you use. These adjustments can be performed without laboratory test equipment.

The "rec cal" controls (21) calibrate recording levels for proper tracking of the Dolby Noise Reduction system. The "bias" adjustment controls (22) fine-tune the bias current for accurate high frequency response. Readjustment of the "rec cal" and "bias" adjustment controls may be necessary if you record on a high-coercivity tape other than Nakamichi SX, or on a low-noise/high-output tape other than Nakamichi EX II. You should, therefore, follow the procedures below when you change tape formulations. It is also a good idea to check the settings occasionally, even if you record on only one formulation.

Record Calibration

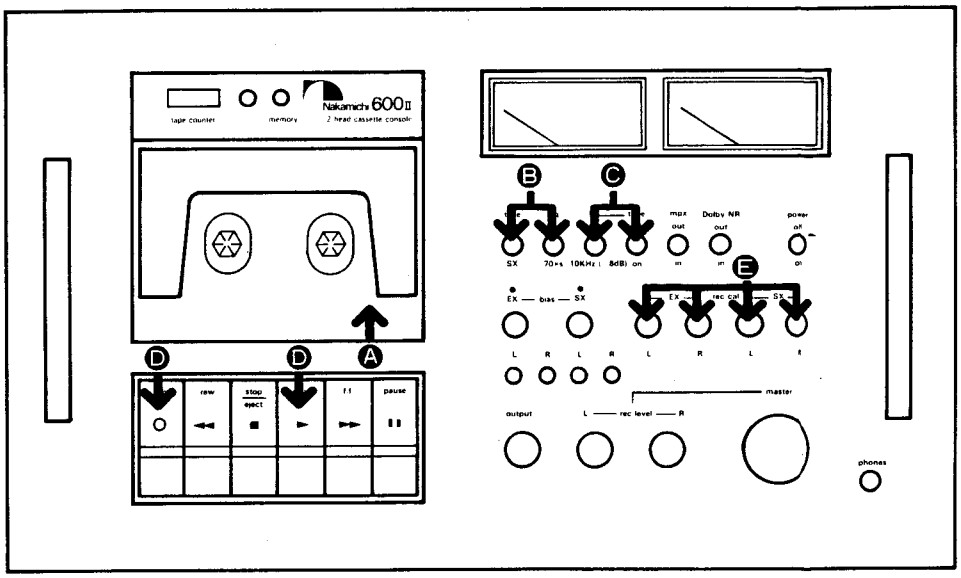
(A) Load a cassette as before.

(B) Set the "tape" and "Eq" switches according to the type of tape in use. See Page 6 for further details.



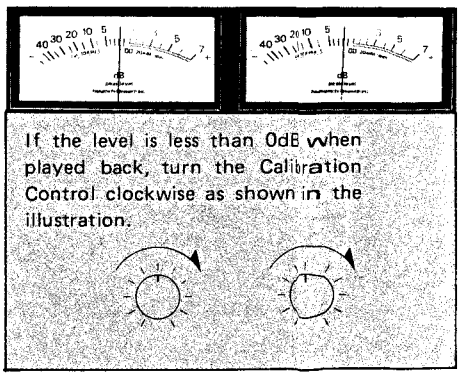
(C) The "rec cal" controls work in conjunction with the test tone switch (20) and the test tone frequency switch (16). Set the test tone switch to the "on" (depressed) position. Set the test tone frequency switch to the 400 Hz (extended) position. A small lamp above the appropriate pair of "rec cal" controls (EX or SX) will glow.

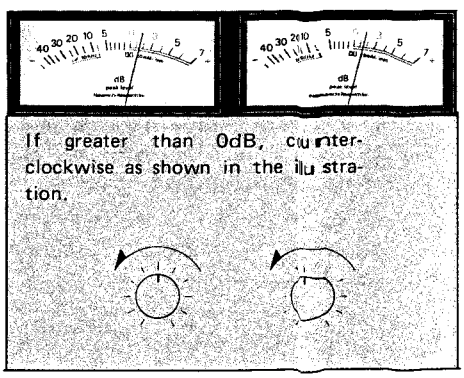
(D) Record the test tone for about 30 seconds. Rewind the tape and play back.



(E) Observe the meters (13) during playback. They should be within 1 dB of the "0 dB" mark. If they are, level calibration is complete. If they are not, turn the appropriate "rec cal" controls (left or right, EX or SX). Turn clockwise to correct a low reading. Turn counterclockwise to correct a high reading.

(F) Do not expect the meter indications to change <u>while</u> you are adjusting the "rec cal" controls. Repeat steps (D) and (E) until the meters read within 1 dB of the "0 dB" mark during playback.





Bias Adjustment

(A) Load a cassette as before.

(B) Set the "tape" and "Eq" switches according to the type of tape in use. See Page 6 for detailed information. (Do not use any of the "Special Eq Settings" for this procedure.) Set the "Dolby NR" switch to its "off" (extended) position.

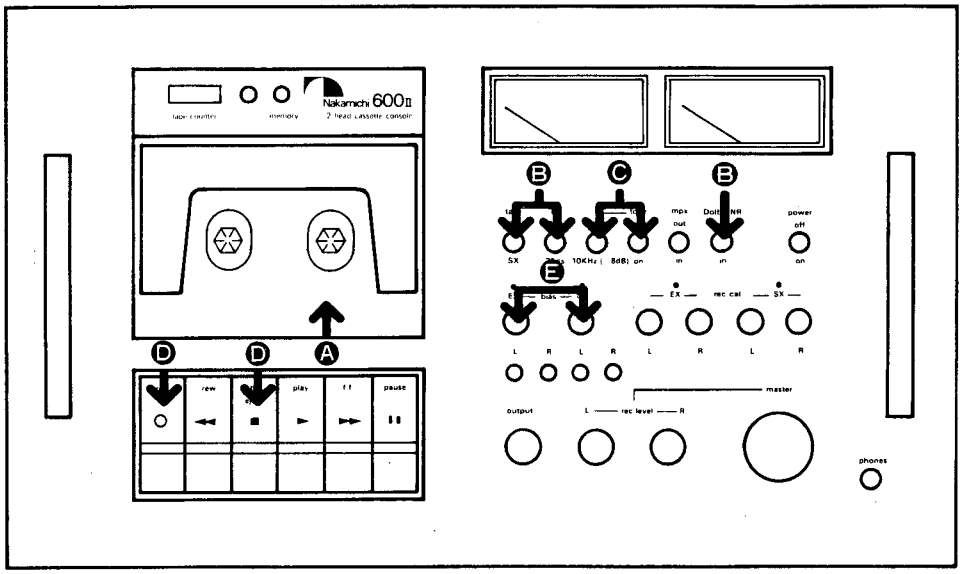
(C) The "bias" adjustment controls work in conjunction with the test tone switch (20) and the test tone frequency switch (16). Set the test tone switch to the "on" (depressed) position. Set the test tone frequency switch to the 10 kHz (depressed) position. A small lamp above the appropriate "bias" adjustment control (EX or SX) will glow.

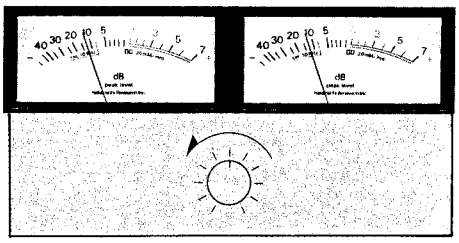
(D) Record the test tone for about 30 seconds. Rewind the tape and play back.

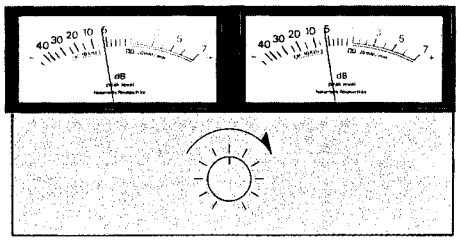
(E) Observe the meters (13) during playback. They should be right on the mark at −8 dB. If they are, level calibration is complete. If they are not, turn the appropriate "bias" adjustment control (EX or SX). Turn counterclockwise to correct a low reading. Turn clockwise to correct a high reading.

(F) Do not expect the meter indications to change <u>while</u> you are turning the "bias" adjustment controls. Repeat steps (D) and (E) until the meters read right on the mark at −8 dB during playback.

(G) If you find that you have had to adjust the "bias" controls for a meter discrepancy of greater than 2 dB, go back and double-check the "rec cal" levels. This will ensure that <u>both</u> sets of adjustments are optimum for the tape formulation in use.







The Dolby System

What it will and will not do.

The Dolby Noise Reduction circuits of the 600 II reduce the hiss inherent in the tape recording process. The Dolby system cannot reduce the noise of your source material. If your records, FM broadcasts, microphones, and other sources are noisy, the cassette deck's Dolby system will not improve them. But the Dolby system will reduce tape noise by as much as 10 dB.

The Dolby system has an encode (record) and a decode (playback) process. Dolby-encoded cassettes should be labeled as such; when played back without the proper Dolby decoding, they will sound unnaturally "bright". Conventional (non-Dolby) cassettes will sound unnaturally "dull" when played back with Dolby decoding. This boosting and cutting of the high frequencies has much to do with how Dolby Noise Reduction is accomplished.

How the system works

The Dolby encoder boosts the high-frequency program content before it goes onto the tape. The Dolby decoder gives the high frequencies equal and opposite treatment during playback. While the decoder returns the high-frequency content to original levels, it simultaneously reduces the high-frequency noise incurred in the recording process.

Because noise is more noticeable during quiet passages than during loud passages, the Dolby system does not treat all high frequency signals equally. It gives more of a boost to low-level high-frequency signals than it does to high-level high-frequency signals. This variation of the Dolby system's effect across the dynamic range distinguishes Dolby Noise Reduction from simply "turning up the treble" on record and "turning down the treble" on playback.

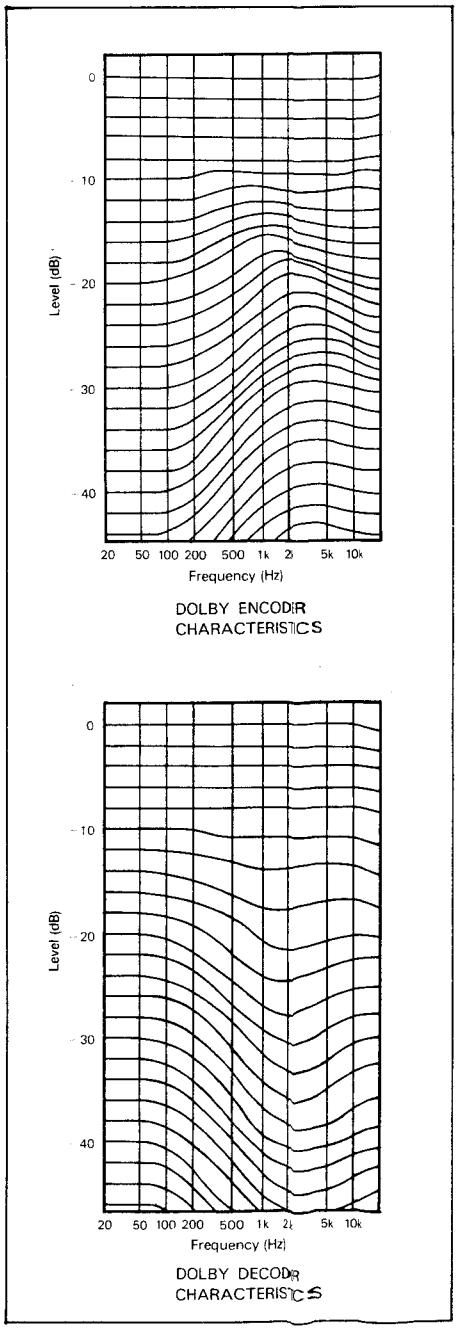
"Turning the treble" up and down is, in fact, the basic idea behind tape record and playback equalization, RIAA phono equalization, and FM pre-emphasis/de-emphasis. All of these systems involve boosting the high frequencies at one end and equal reduction of high frequencies at the other. All work to reduce noise. But the amount of boosting in each case is limited by the headroom characteristics of the medium. In the case of tape recording, too much equalization (too strong a high-frequency boost) will saturate the tape and distort the recording. Hence there is a limit to the amount of noise reduction attainable through equalization alone. FM pre-emphasis and phono equalization face similar limitations.

The Dolby Noise Reduction system does not, because the Dolby system only boosts low-level signals. This provides an additional 10 dB of noise reduction without threatening the headroom of the medium.

Why is level calibration necessary?

The "rec cal" controls of the Nakamichi 600 II are used in conjunction with the 400 Hz reference test tone. The adjustment assures that a tone recorded at 0 dB will play back at 0 dB. Although tape formulations of the same category (Page 6) pose the same equalization requirements, variations in tape sensitivity will cause one formulation to provide more output than another formulation. The controls permit you to adjust the deck for the sensitivity of each formulation you use.

Without calibration, the Dolby circuits could potentially mis-track on different formulations. Recording on a more sensitive formulation without recalibrating would mean that a test tone recorded at 0 dB would play back at higher than 0 dB. The Dolby decoder would fail to provide the full high frequency cut, and the tape would sound slightly "bright" on playback. Conversely, recording on a less sensitive tape without recalibrating would produce slightly "dull" playback. Level calibration is essential for Dolby system compatibility from cassette to cassette.



Maintenance

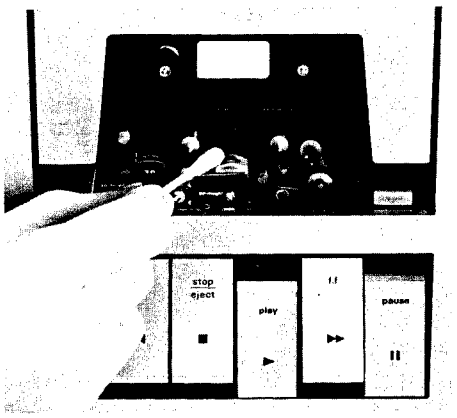
Head and Transport Cleaning

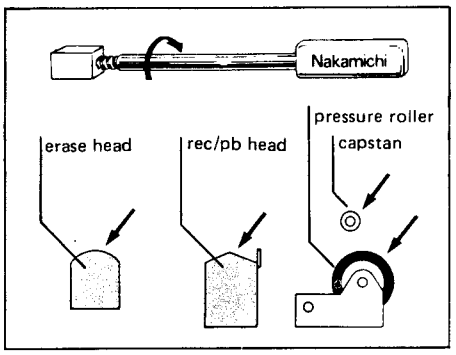
To maintain the Nakamichi 600 II's superior performance and to prolong the life of the heads and pressure rollers, all parts that come into contact with the tape should be cleaned frequently and thoroughly. Dirty heads, capstans or pressure rollers may result in any of the following symptoms:

-Uneven sound levels.
-Loss of high frequencies.
-Wow and flutter.
-Damage to cassette tapes.
-Tape squeal caused by excess friction.

Even the best cassettes deposit oxide sheddings onto the heads, capstans and pressure rollers. Clean a minimum of once every ten hours of use, even if you use premium tapes. If you must use inferior brands of tape, you may need to clean after each playing. By observing the amount of contamination accumulated on the cleaning stick pad or cotton tip, you will be able to judge whether you are cleaning the 600 II frequently enough. Repeated cleanings, if properly done, will not harm the deck Hence, it is impossible to clean too often.

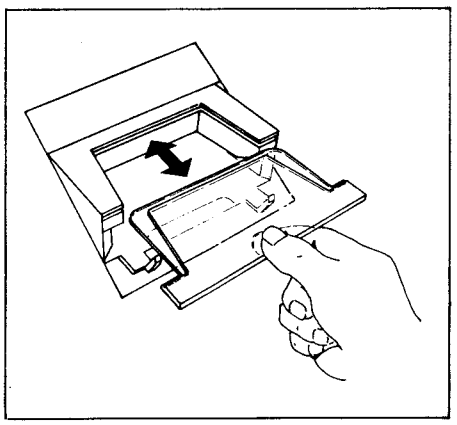
A Cleaning Kit consisting of a plastic stick, sponge tips, cotton-tipped sticks and a container of alcohol is supplied with your Nakamichi 600 II. When the alcohol runs out, use commercially available isopropyl alcohol (preferably undiluted). "Q-tips" and other cotton swabs may be used in the place of the sponge tips. Do not, however, rely on head cleaning cassettes. Some head-cleaning cassettes are unduly abrasive and may damage the heads. None of them clean the capstans and pressure rollers properly. Perform all cleaning with alcohol. Use the plastic stick with a sponge tip screwed onto its end. A cotton-tipped stick is equally effective, but be careful not to leave strands of cotton on any of the cleaned parts.





Clean in the following sequence:

(A) Turn the power switch (17) on. Push the "stop/eject" button (7) to open the cassette lid. Carefully pull the acrylic cassette lid plate (5) out of the cassette lid. Push the cassette lid back into its well.



(B) With a cleaning stick dipped in alcohol, clean the surfaces of the record/playback and the erase heads Clean with short, firm, back-and-forth strokes along the path of tape travel. Also be sure to clean the tape guides on both heads.

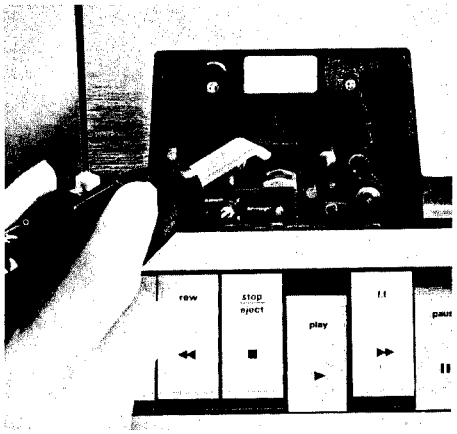
(C) Press the "play" button (10). Carefully apply the cleaning stick to the pressure roller as it turns. Use light pressure and an up-and-down stroke to cover the entire width of the roller. If you are using a cotton-tipped stick, make sure to apply the tip to the side of the roller rotating away from the capstan; the cotton may otherwise get caught between the capstan and the roller (if this should happen, simply press the "stop/eject" button and remove the cotton).

(D) While the deck is in "play", press the "pause" button (12) and apply a clean section of the cleaning stick pad to the capstan. Move the pad up and down the capstan shaft as it turns.

(E) Press the "stop/eject" button once to stop the transport and again to open the cassette lid. Carefully re-insert the acrylic cassette lid plate (5).

Cleaning is now completed, but give the cleaned surfaces a minute or two to dry off completely before playing a tape.

CAUTION: Tape guides and heads are critically aligned at the factory. Do not exert too much pressure on these parts. It is better to stroke repeatedly than to stroke forcefully.
— Do not flood various parts with cleaning alcohol. After dipping the stick into alcohol, squeeze off any exess.
— Be sure to remove any cotton strands from the cleaned parts.



Demagnetizing

All metal parts that come into contact with the tape must be occasionally demagnetized to prevent the build-up of residual magnetism. Such magnetism can add hiss to a tape being played and partially erase the high frequencies. Although the heads and capstans of Nakamichi cassette decks require demagnetizing less frequently than those of most other cassette decks, you should nevertheless demagnetize once every 50 hours of use to be on the safe side.

The Nakamichi DM-10 Demagnetizer is recommended since it has been specifically designed for cassette decks, but any properly designed demagnetizer will do.

(A) Remove all tape from the vicinity of the tape deck before proceeding. Make sure the 600 II's power switch (17) is off. Remove the cassette lid plate (5) as above. Snap the cassette lid back into its well.

(B) Turn the demagnetizer on while it is at least two feet away from the deck. Slowly bring the tip as close as possible to the record/playback head. Do not make contact with the head unless the tip of the demagnetizer is covered with vinyl or rubber to prevent scratching the record/playback head's surface. A piece of vinyl tape may be used to cover the tip if it is not already covered.

(C) Move the demagnetizer slowly in a random pattern about the surface of the head for at least 10 seconds Then move the demagnetizer to the capstan, repeating the random pattern for 10 seconds. (It is not necessary to demagnetize the erase head.)

(D) After demagnetizing the capstan, slowly withdraw the demagnetizer from the deck. Wait until the demagnetizer is at least two feet from the deck before turning the demagnetizer off. Never turn it off while it is close to a head or the capstan, as this may semi-permanently magnetize the part.

Lubrication

The moving parts of the Nakamichi 600 II transport are fitted with oil-less bearings. Periodic lubrication is not necessary.

Cleaning the Faceplate

Remove dust or smudges with diluted detergent applied with a soft cloth. Never use solvents, ammonia, or abrasive cleaning agents.

Head Height and Azimuth

The head height and azimuth adjustments of the Nakamichi 600 II are calibrated at the factory for optimum performance. Readjustment should only be done by qualified service technicians.

Repairs

Your Nakamichi 600 II has been designed for long service life. Should your 600 II require servicing, please consult your Nakamichi dealer or the Nakamichi dealer nearest you. As there are no user-serviceable parts inside the unit, please do not attempt your own repairs.

Troubleshooting

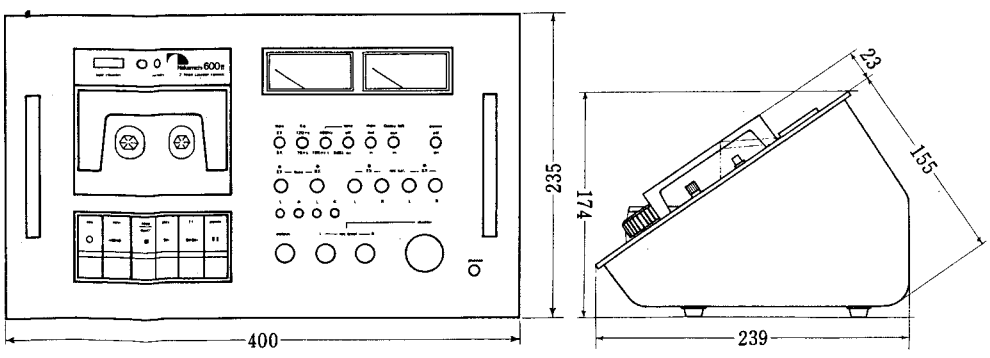
Condition	Probable Cause	Remedy
Tape does not run.	1. Power cord is unplugged. 2. Tape is loose inside cassette. 3. Cassette is not properly seated.	Plug in cord firmly. Wind tape up. Reseat cassette.
Cannot record.	1. Input disconnected. 2. Head dirty. 3. Cassette tabs have been removed.	Check connections. Clean head. Place adhesive tape over the tab opening.
Cannot play back.	1. Output disconnected. 2. Dirty head.	Check connections. Clean head.
Excessive playback hiss.	1. Head is magnetized. 2. Recording volume is too low.	Demagnetize head. Adjust recording levels.
Distorted playback.	1. Program material is itself distorted. 2. Recording levels are too high.	Check program material. Adjust recording levels.
Unsteady tape travel.	1. Capstan and/or pressure roller dirty. 2. Tape packing inside cassette faulty.	Clean these parts. Replace cassette.
Incomplete erasure.	Erase head is dirty.	Clean head.
Weak high frequencies.	1. Improper bias level for tape. 2. Dirty heads. 3. Magnetized head.	Adjust the bias for each formulation in use. Clean heads. Demagnetize head.
Hum heard during record or playback.	1. Induction fields near deck. 2. Signal cable grounding faulty.	Keep deck away from amplifier, transformers, fluorescent lamps, etc. Replace signal cables.

Specifications

Specifications:

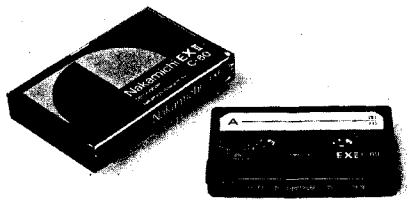
Power Source	100, 120, 220, or 240V; 50/60Hz
Power Consumption	15W Max.
Tape Speed	1-7/8 ips. (4.8 cm/sec.) ±1%
Wow and Flutter	Less than 0.12% WTD Peak, 0.08% WTD rms
Frequency Response	35-20,000 Hz ±3 dB (SX, EXII Tapes, −20 dB Rec. Level)
Signal to Noise Ratio	Better than 60 dB 400 Hz, 0 dB IHF-A WTD rms.
(Dolby In, SX Tape, WTD)	Better than 63 dB 400 Hz, 3% THD IHF-A WTD rms.
Total Harmonic Distortion	Less than 1.5% 400 Hz 0 dB (SX, EXII Tapes)
Erasure	Better than 60 dB below saturation level at 1 kHz
Separation	Better than 35 dB at 1 kHz, 0 dB
Crosstalk	Better than 60 dB at 1 kHz, 0 dB
Bias Frequency	105 kHz
Transistors	68
Diodes	31
IC's	2
Input	50 mV, 50 k ohms
Output Level	580 mV (400 Hz, 0 dB, Output Level at Max)
Headphone	45 mW
Dimensions	15.75 (W) x 6.85 (H) x 9.41 (D) inches 400 (W) x 174 (H) x 239 (D) m/m
Approximate Weight	14.3 lbs (6.5 Kgs)

- Specifications and appearance design are subject to change for further improvement without notice.
- Dolby NR under license from Dolby Laboratories.
- The word "DOLBY NR" and the Double-D-Symbol are trademarks of Dolby Laboratories.

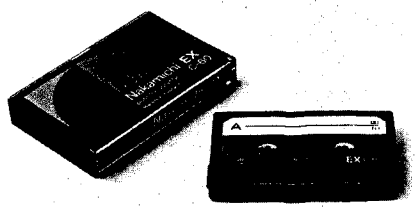


Optional Accessories

SX Cassette Tape C-60, C-90



EXII Cassette Tape C-60, C-90



EX Cassette Tape C-60, C-90

Head Demagnetizer